

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/36164

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A01H 1/00; C07H 21/04; C07K 14/415; C12N 5/14, 9/00

US CL : 435/6, 69.1, 70.1, 91.4, 468, 183, 419, 320.1; 530/370; 536/23.6; 800/278, 279, 295

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 435/6, 69.1, 70.1, 91.4, 468, 183, 419, 320.1; 530/370; 536/23.6; 800/278, 279, 295

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
commercial sequence databases

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO200121650-A2 (DU PONT DE NEMOURS & CO E. I.) 29 March 2001, see SEQ ID NO:8.	1,2,6,8-12,15-19,22

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Further documents are listed in the continuation of Box C.

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See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed.

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

08 July 2004 (08.07.2004)

Date of mailing of the international search report

31 AUG 2004

Name and mailing address of the ISA/US

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BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1, 2, 6, 8-12, 15-19 and 22, drawn to a polynucleotide and first method of use of SEQ ID NO:3 or a polynucleotide encoding SEQ ID NO:4.

Group II, claim(s) 1, 2, 7-12, 15-19 and 22, drawn to a polynucleotide and first method of use of SEQ ID NO:5 or a polynucleotide encoding SEQ ID NO:6.

Group III, claim(s) 3-5, drawn to a polypeptide of SEQ ID NO:4.

Group IV, claim(s) 3-5, drawn to a polypeptide of SEQ ID NO:6.

Group V, claim(s) 13, drawn to a method of obtaining SEQ ID NO:3 or a polynucleotide encoding SEQ ID NO:4.

Group VI, claim(s) 13, drawn to a method of obtaining SEQ ID NO:5 or a polynucleotide encoding SEQ ID NO:6.

Group VII, claim(s) 14, drawn to a second method of obtaining SEQ ID NO:3 or a polynucleotide encoding SEQ ID NO:4.

Group VIII, claim(s) 14, drawn to a second method of obtaining SEQ ID NO:5 or a polynucleotide encoding SEQ ID NO:6.

Group IX, claim(s) 20, drawn to a second method to use in antisense SEQ ID NO:3 or a polynucleotide encoding SEQ ID NO:4.

Group X, claim(s) 20, drawn to a second method to use in antisense SEQ ID NO:5 or a polynucleotide encoding SEQ ID NO:6.

Group XI, claim(s) 21, drawn to a third method to use by gene disruption of SEQ ID NO:3 or a polynucleotide encoding SEQ ID NO:4.

Group XII, claim(s) 21, drawn to a third method to use by gene disruption of SEQ ID NO:5 or a polynucleotide encoding SEQ ID NO:6.

Group XIII, claim(s) 23, drawn to a fourth method of using SEQ ID NO:3 or a polynucleotide encoding SEQ ID NO:4 in producing rubber compounds.

Group XIV, claim(s) 23, drawn to a fourth method of using SEQ ID NO:5 or a polynucleotide encoding SEQ ID NO:6 in producing rubber compounds.

Group XV, claim(s) 24-25, drawn to a method to obtain SEQ ID NO:4.

Group XVI, claim(s) 24-25, drawn to a method to obtain SEQ ID NO:6.

The inventions listed as Groups I-XVI do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: SEQ ID NO:3 (or a polynucleotide sequence encoding SEQ ID NO:4) is structurally, chemically, and biologically distinct from SEQ ID NO:5 (or a polynucleotide encoding SEQ ID NO:6). Moreover, there are different methods to obtain these sequences, as evidenced by Groups V-VIII and XV-XVI, which recites different steps using different reagents. Further, there are multiple methods to use these sequences, as evidenced by Groups IX-X (antisense), XI-XII (gene disruption), and XIII-XIV (natural rubber compounds). These different methods to use have different steps, involve different reagents and have different results. Accordingly, the claims lack unity.

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Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claim Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claim Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
Please See Continuation Sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1,2,6,8-12,15-19,22

Remark on Protest

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The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.